

APPENDIX F

I-PLAN

for

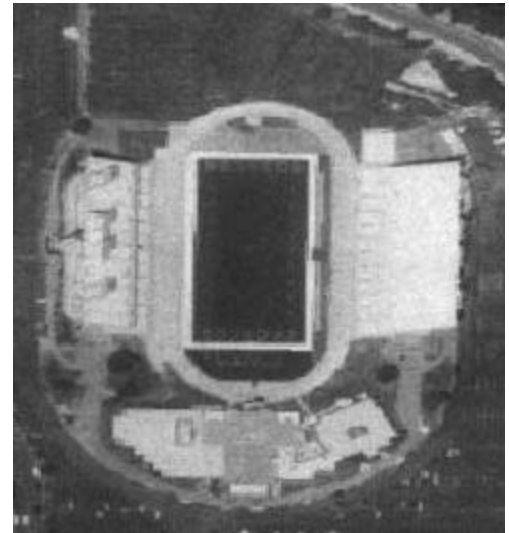
ORTHOIMAGERY

IMAGERY IMPLEMENTATION PLAN

1. EXECUTIVE SUMMARY

Imagery provides a positionally correct photographic image of the earth. An orthoimage is a georeferenced image prepared from an aerial photograph or other remotely sensed data. These data are invaluable as base data for cartographic display and GIS analysis.

The I-team has identified the U.S. Geological Survey (USGS) Digital Orthophoto Quadrangles (DOQs) as the orthoimagery standard. They are distributed as quarter-quads known as DOQQs. There are 6,532 DOQQs covering Idaho. As of June 1, 2003, 6,072 are complete, in progress, or scheduled for completion by USGS; no funding has been obligated for the remaining 460 DOQQs. Forty-four DOQQs have been requested for completion in 2004.



The first priority is to acquire a complete set for Idaho. It is believed that USGS and U.S. Forest Service (USFS) will complete the production of the remaining areas of the Idaho over the next two years. Upon completion of once-over coverage, the subsequent priority is to pursue second-generation imagery. One option is to fund and conduct another round of the National Aerial Photography Program (NAPP) photography. Additional options include cost-share partnerships with local government entities that are acquiring cyclical imagery for their areas of interest and recent satellite imagery products. The Imagery Technical Working Group recommends that the DOQ standard be required for datasets provided by others if they are to be incorporated into the framework layer.

2. DESCRIPTION

2.1 Theme Description

The USGS compiles and produces a standard digital orthoimage in one-meter ground resolution quarter quadrangles (1:12,000-scale, 3.75- x 3.75-minute in extent) [<http://www-wmc.wr.usgs.gov/doq/>]. The USFS also produces this standard dataset.

The Federal Geographic Data Committee (FGDC) *Framework Introduction and Guide* explains that “Orthoimagery provides a positionally correct image of the earth. An orthoimage is a georeferenced image prepared from an aerial photograph or other remotely sensed data from which displacements of images caused by sensor orientation and terrain relief have been removed.”¹

Digital orthoimagery is typically used in a digital orthophoto format. A digital orthophoto is a georeferenced image that has the properties of an orthographic projection, that is, a positionally correct image of the earth, composed of an array of georeferenced pixels that encode ground reflectance as a discrete digital value. The orthophoto combines the image characteristics of a photograph with the geometric qualities of a map.²

2.2 Vision Statement

Plan for, fund, maintain, and distribute current and accurate imagery data for Idaho.

2.3 Interdependencies

This imagery dataset can be used to derive and compile many geographic features that are part of the framework for Geographic Information System (GIS) applications. In particular, numerous vector data themes can be compiled from digital orthoimagery. The dataset can also be used to analyze or reference other data and to update older data based on the visible features on the digital orthoimagery. An accurate geodetic control layer can enhance positional accuracy for orthoimagery.

3. BENEFITS AND RISKS

3.1 Benefits and Driving Issues

Digital orthoimagery is widely used by federal, state, and local government agencies as the base imagery for compiling geographic data for many different types of projects.

1 *Framework Introduction and Guide*. Federal Geographic Data Committee, Washington D.C., 1997, p. 18.

2 *National Mapping Program Technical Instructions Standards for Digital Orthophotos*, December 1996, and *Framework Introduction and Guide*, Federal Geographic Data Committee, USGS, Washington D.C., 1997.

Some agencies are highly dependent on DOQs as their main or only source of imagery. Since many agencies and projects use DOQs to help develop public information it is a priority to have complete and current data available.

3.2 Risk Analysis

Nearly 94 percent of Idaho is covered or will soon be covered by digital orthoimagery. If the remaining six percent is not completed, users will turn to other sources of imagery or data that may not be as accurate or detailed.

4. INVENTORY

4.1 Stakeholders

The primary Author and Steward of DOQs is USGS. Digital orthoimagery produced by the USGS is archived and distributed by EROS Data Center (EDC) in Sioux Falls, South Dakota. The general public can order orthoimagery data from EDC.

The USGS Mapping Liaison for Idaho, INSIDE Idaho, and the Idaho Department of Lands currently integrate and enhance public-domain DOQs acquired from USGS.

Consumers for this thematic layer range from the general public to GIS and remote sensing professionals.

4.2 Data Sources

The USGS compiles and produces a standard digital orthoimage in one-meter ground resolution quarter quadrangles (1:12,000-scale, 3.75- x 3.75- minute in extent), or DOQs).³ The USFS also produces this standard dataset.

Numerous local governments acquire orthoimagery through private contractors, and many companies offer satellite imagery products.

4.3 Current Status

The NAPP photography is the primary image source currently used to produce digital orthoimagery (<http://edc.usgs.gov/glis/hyper/guide/napp>).

Of the 6,532 3.75- x 3.75- minute DOQs that cover Idaho, 6,072 are complete, in progress, or scheduled for completion in 2003. No funding has been allocated for the remaining 460 that are required to complete the one-meter panchromatic digital orthophoto layer for Idaho. See Figure 1 for status graphic. Forty-four DOQs have been requested for completion in 2004.

³ Other terms are quarter quad and DOQQ.

The completion dates of the 6,532 orthophotos are:

Date	QQ Count
2004	44
2000	6
1999	86
1998	2174
1997	7
1996	24
1995	114
1994	145
1993	141
1992	2432
Unknown	1359
Total	6532

4.4 Business Needs

This dataset can be used to capture and compile many geographic features that are part of the framework for Geographic Information System (GIS) applications. In particular, numerous vector data themes can be compiled from digital orthoimagery. The dataset can also be used to analyze or reference other data and to update older data based on the visible features on the digital orthoimagery. Change detection is another use of these data. Finally, these data can serve as control for vertical integration of all framework data layers.

Once-over DOQ coverage for the state is the first priority. Priorities for second-generation imagery will be for areas experiencing rapid urban growth. This dataset will contribute to urban planning and growth management, transportation planning, and watershed management in these areas. Second-generation imagery will be prioritized based on issues pertinent to federal, state, and local requirements for the data.

4.5 Challenges

Challenges include securing funding to complete the remaining six percent of the state, funding to develop areas targeted for second-generation imagery, and funding to enhance distribution at the state level.

5. STANDARDS

Standards for DOQs are described in the USGS *National Mapping Program Technical Instructions Standards for Digital Orthophotos*, dated December 1996.

6. IMPLEMENTATION STRATEGY

6.1 Implementation Approach

Idaho will purchase DOQs produced by USGS. Entities in Idaho will integrate and enhance the public-domain DOQs that have been acquired from USGS.

6.2 Implementation Team

The primary creation, archive, and distribution point for orthoimagery data produced by the USGS is located at the EROS Data Center (EDC) in Sioux Falls, South Dakota.

The USGS Mapping Liaison for Idaho, INSIDE Idaho will continue integrating and enhancing public-domain DOQs that have been acquired from USGS.

6.3 Data Development

An additional 460 DOQs are required to complete once-over, one-meter panchromatic digital orthophoto coverage for Idaho. It is believed that USGS will author these data in the coming year. Upon completion of once-over coverage, the subsequent priority would be to pursue second-generation imagery.

6.4 Data Maintenance

EROS Data Center in Sioux Falls, South Dakota maintains and archives digital orthoimagery produced by the USGS.

6.5 Data Distribution

EROS Data Center in Sioux Falls, South Dakota, distributes digital orthoimagery produced by the USGS. The general public can order orthoimagery data from this database.

The USGS Mapping Liaison for Idaho, INSIDE Idaho will distribute public-domain DOQs for Idaho that have been acquired from USGS.

6.6 Implementation Schedule

We project that complete coverage for Idaho will be available by 2004.

6.7 Cost Estimates

Approximately \$4.8 million has been spent to date. Assuming the 44 DOQs requested get funding, it is estimated that \$177,000 (416 @ \$425/quarter quad) will be required to complete once-over coverage for Idaho. No estimate for integration and enhancement is available at this time.

7. RECOMMENDATIONS

7.1 Recommendations for Institutional and Financial Initiatives

None at this time.

7.2 Recommendation for Data Stewardship

INSIDE Idaho.

7.3 Recommendations for Legislative Initiatives

None at this time.

7.4 Recommendations for Policy, Rule and Procedural Changes

None at this time.

7.5 Recommendations for Standards

USGS *National Mapping Program Technical Instructions Standards for Digital Orthophotos*, dated December 1996 (<http://rockyweb.cr.usgs.gov/nmpstds/doqstds.html>). We recommend that any new imagery incorporated into the framework layer adhere to, at a minimum, the DOQQ standards referenced above.

8.0 PLAN UPDATE CYCLE

This plan will be reviewed at least annually and updated as appropriate.

1-Meter DOQ Status for Idaho (As of 20021007)

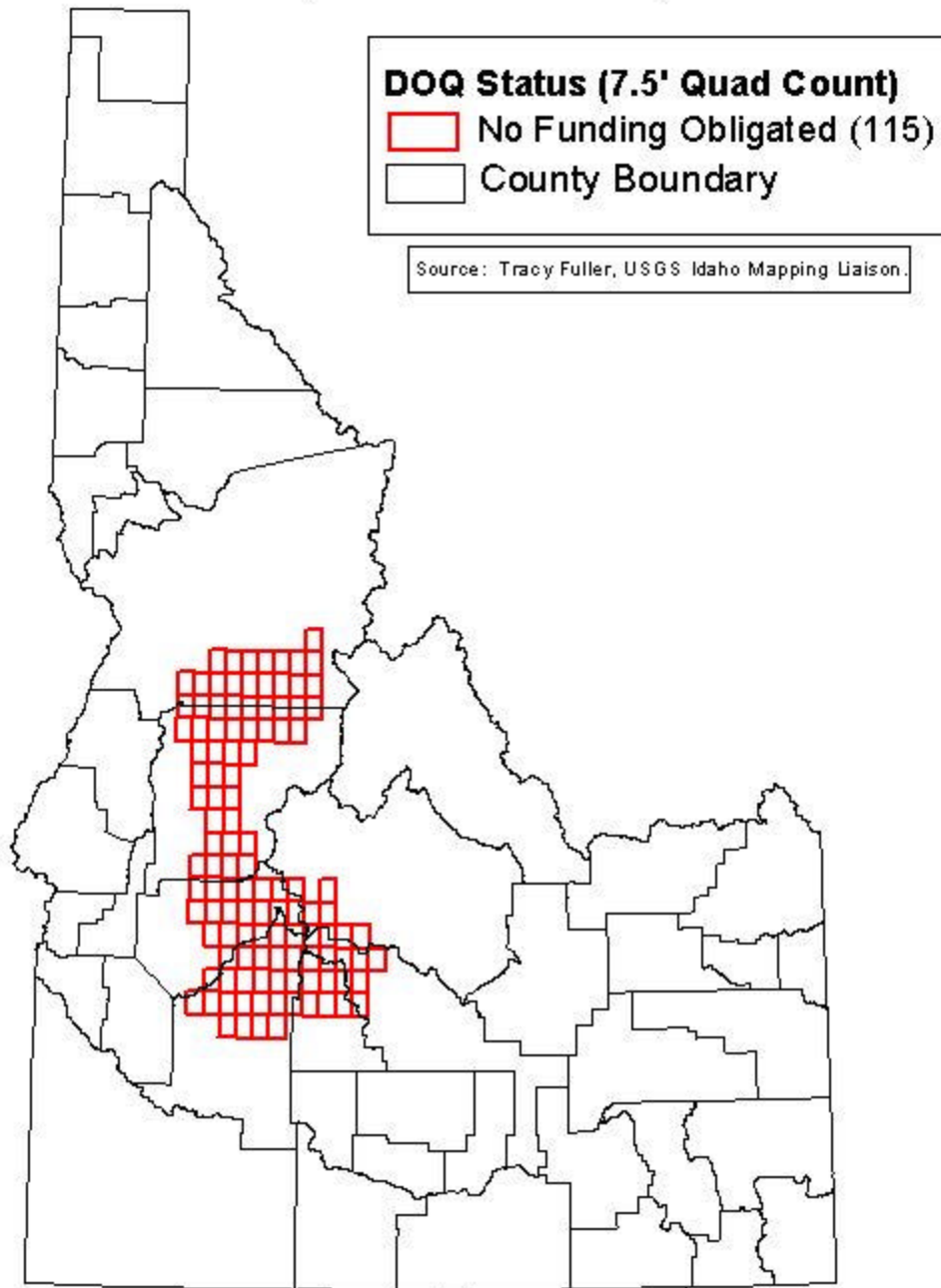


Figure 1. DOQs for Idaho with no funding obligated.